

noon of that date. The forecast issued at that time covered a period of two days, and additional forecasts were issued the following night and morning and broadcast by radio station KYW.

Advices during the month were wired to the California Fruit Growers' Exchange, Los Angeles, Calif., in advance of the development of heat waves in the Chicago forecast district, in order to guide the exchange in the shipping of fruit to this area.

Fire-weather forecasts were resumed for the State and National forests in Minnesota on July 28.

Special flying forecasts were furnished the national air tour for all the points in and bordering on the Chicago forecast district at which these planes stopped. The tour started from Detroit June 27 and returned July 12. The forecasts, as indicated by a number of the flyers, proved highly satisfactory.—*H. J. Cox.*

NEW ORLEANS FORECAST DISTRICT

Moderate weather conditions prevailed generally during July. No warnings were issued for the west Gulf coast and no general storm occurred.—*I. M. Cline.*

DENVER FORECAST DISTRICT

Frequent disturbances of moderate intensity which advanced eastward from the Rocky Mountain Plateau were attended by the usual summer showers and thunderstorms, especially in the central and northern portions of the district, with an excess of rainfall in Colorado, southeastern Wyoming, and north-central Montana. A marked deficiency in precipitation occurred in most of New Mexico and central and eastern Arizona. While it was cooler than normal over nearly all of the northern portion of the eastern Rocky Mountain slope, the month was generally considerably warmer than the average west of the Continental Divide and in New Mexico.

With the exception of forecasts on the 9th of fresh to brisk westerly winds, and on the 25th of brisk to strong westerly winds, both of which were included in the morning predictions of those dates for Wyoming, no special forecasts or warnings were issued and none was required.—*J. M. Sherier.*

SAN FRANCISCO FORECAST DISTRICT

The more important forecasts and warnings related to the fire-weather situation and to the Smith-Bronte airplane flight. The latter took place on the 14th and 15th of the month and required the issuance of special bulletins on the 14th and on several preceding dates descriptive of weather conditions between the mainland and the islands. Careful attention was paid to these advices by the aviators, especially Mr. Bronte, who was in close touch with the Weather Bureau office at San Francisco for a week before the flight. The bulletins were quite successful and received due acknowledgment from the flyers after the completion of their journey, who testified that their chief dependence was on "dead reckoning." Aside from two sextant observations which gave them some idea of their longitude on the morning of the 15th, they were unable to determine their position from celestial observations, and had they not followed a well-conceived compass course and made very accurate allowance for "drift" their adventure might have ended disastrously. This fact earned their appreciation of the weather bulletins from which alone they derived their drift calculations.

It appears that they were exactly on their course until very near the island of Oahu, when, in doubt as to their latitude and fearful of passing the entire archipelago to the north, they departed from their course, turned southward, and crashed on the island of Molokai. Had they continued straight on, instead of turning to the south, they would have landed safely at Wheeler Field, their objective.

The fire situation in the forests grew slowly but steadily more dangerous, but conditions were not acute over the northern parts of the district until the 22d, when a fragment of the North Pacific high pressure system moved inland, bringing excessively high temperatures and low humidities to Oregon and Washington. This situation was anticipated in warnings issued the day before. Others, similar in type, arising in the North Pacific States, called for like bulletins on the 27th and 31st. Warnings of danger from lightning storms were sent to various California forests on 13 occasions, and the attempt at localization achieved some degree of success. On one occasion, viz, the 28th, more than 100 fires were started by lightning in the Klamath, Trinity, Shasta, and Lassen national forests within 48 hours after issuance of the predictions. Thunderstorm warnings were also incorporated on numerous occasions in the State forecasts for Washington, Oregon, Idaho, and Nevada.—*Thomas R. Reed.*

RIVERS AND FLOODS

By R. E. SPENCER

The great flood in the Mississippi River finally terminated on July 14, 1927, with the falling of the water below flood stage at Baton Rouge, La.; and by the end of the month the entire lower river was well within the bankful stage. As noted in the special flood bulletin of the New Orleans Weather Bureau office of August 1, 1927, however, considerable areas of swamp bottoms and between 30,000 and 35,000 acres of agricultural land were still inundated. As the recession of water from these areas will depend almost wholly upon absorption and evaporation, it will of course take place very slowly.

The annual rise in the Columbia River, report on which was deferred from the June issue of this REVIEW, occurred substantially as predicted in the Portland, Oreg., snowfall bulletin of April, 1927. It was stated in that bulletin that owing to the snowfall excess in the Columbia drainage basin the crest of the rise would, with the prevalence of normal temperature, be later than and above the average. Relatively cool weather prevailed well into June, and the date of the crest at Portland was 9 days later and 2.9 feet higher than the average. Warnings of the approach of the flood received wide and effective distribution, so that practically no movable property was lost, farmers generally refrained from planting lands that were likely to be flooded, and suspension of business was reduced to a minimum. Incomplete reports of losses due to this flood give the following figures:

Tangible property.....	\$17, 041
Matured crops.....	33, 125
Prospective crops.....	80, 600
Livestock and other movable property.....	500
Suspension of business.....	109, 900
	<hr/> 241, 166

Property valued at \$152,650 was reported saved by the warnings; but the official in charge of the Weather Bureau office at Portland reports that "probably the greatest benefit of the river service this year was in preventing

undue alarm." The excess of snow in the mountains of the basin gave rise to a number of amateur prophesies and widespread public expectation of extreme high water, and the persistent denial by the Weather Bureau of this probability undoubtedly prevented the expenditure of large sums of money that would otherwise have been spent for protective measures.

Other floods during July were in all cases of little magnitude and without damage. The report on the June rises in the St. Louis district is again deferred.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC DRAINAGE					
Santee:	<i>Feet</i>			<i>Feet</i>	
Rimind, S. C.	12	20	25	13.3	July 23-24.
Ferguson, S. C.	12	23	28	12.6	July 26.
Saluda: Chappells, S. C.	14	19	19	14.0	July 19.
MISSISSIPPI DRAINAGE					
Mississippi:					
Vicksburg, Miss.	45	(1)	11	58.7	May 4.
Natchez, Miss.	46	(1)	10	56.5	May 1 and 4.
Angola, La.	45	(1)	13	57.5	May 15-17.
Baton Rouge, La.	35	(1)	14	47.8	May 15.
Donaldsonville, La.	28	(1)	8	37.1	May 15-17.
Illinois:					
Havana, Ill.	14	(1)	4	22.05	June 8.
Beardstown, Ill.	14	(1)	8	25.2	Apr. 26.
Pearl, Ill.	12	(1)	6	22.7	Apr. 26-27.
Missouri: Blair, Nebr.	16	(1)	3	16.8	June 26.
Osage: Osceola, Mo.	20	23	24	21.3	July 23.
Arkansas:					
Dodge City, Kans.	5	24	24	5.0	July 24.
Yancopin, Ark.	29	(1)	8	48.5	Apr. 20.
Cache: Patterson, Ark.	9	(1)	3	9.7	June 29-30.
Yazoo: Yazoo City, Miss.	25	(1)	12	37.4	May 5.
Sulphur: Ringo Crossing, Tex.	20	18	20	21.6	July 20.
WEST GULF DRAINAGE					
Trinity: Dallas, Tex.	25	16	17	28.6	July 17.
Rio Grande:					
San Benito, Tex.	23	(1)	(1)	24.6	June 25.
Brownsville, Tex.	18	(1)	(1)	18.4	June 23.
PACIFIC DRAINAGE					
Colorado: Parker, Ariz.	7	(1)	23	11.3	July 5 and 6.
Columbia:					
Marcus, Wash.	24	(1)	27	32.2	June 19-20.
Vancouver, Wash.	15	(1)	16	23.9	June 18-20.
Pend O'Reille: Newport, Wash.	16	(1)	13	23.7	June 22-23.
Williamette: Portland, Oreg.	15	(1)	14	23.0	June 19-20.

¹ Continued from last month.

² Below flood stage at 8 a. m., July 1, 1927.

MEAN LAKE LEVELS DURING JULY, 1927

By UNITED STATES LAKE SURVEY

[Detroit, Mich., August 4, 1927]

The following data are reported in the "Notice to Mariners" of the above date:

Data	Lakes ¹			
	Superior	Michigan and Huron	Erie	Ontario
Mean level during July, 1927:	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>
Above mean sea level at New York.....	602.69	579.55	572.16	246.01
Above or below—				
Mean stage of June, 1927.....	+0.36	+0.12	-0.04	-0.10
Mean stage of July, 1926.....	+1.83	+1.01	+0.96	+0.81
Average stage for July last 10 years.....	+0.62	-0.84	-0.32	-0.34
Highest recorded July stage.....	-1.13	-4.03	-2.25	-2.71
Lowest recorded July stage.....	+1.83	+1.01	+1.04	+1.42
Average departure (since 1860) of the July level from the June level.....	+0.21	+0.07	-0.04	-0.04

¹ Lake St. Clair's level: July, 1927, 574.99 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, JULY, 1927

By J. B. KINCER

General summary.—Higher temperatures in Central and Northern States the first part of the month promoted better growth of warm-weather crops and mostly dry conditions, or only light to moderate showers, permitted generally good advance of field operations. Several days of abnormally warm weather east of the Great Plains were of especial benefit to the corn crop, but were rather unfavorable for winter grains in some central-northern districts. Rain was needed in northern areas from the upper Mississippi Valley eastward and locally elsewhere. In the Southeast drier weather favored cultivation, but in parts of the western Gulf area rather frequent showers hindered outdoor operations and there were some complaints of grassy fields. Moisture was still deficient from the upper Mississippi Valley eastward during the second decade, but the weather was favorable for harvesting and threshing in the grain area during most of the period.

During the latter part of the second decade rather widespread showers were timely and beneficial in most sections and the temperatures were favorable for rapid advance of most crops, with moisture conditions generally satisfactory, except for rather limited areas. Dry, sunny weather was again desired in the Southeast, but the warmer weather was especially favorable in the Northeast. In far western States more moisture was needed in some portions, but, in general, conditions were favorable. Rather cool weather during the last decade retarded the growth of warm-weather crops somewhat, but showers were helpful in previously dry sections, although at the close of the month it had again become droughty in the Lake region.

Small grains.—Winter wheat harvest made generally excellent advance during the first decade with cutting advancing at the close of the period north to Pennsylvania, southern Michigan, and northern Nebraska. Threshing advanced satisfactorily in the southern portion of the belt. Showers made conditions somewhat less favorable for cutting winter wheat during the second decade, but progress was mostly good and threshing made generally satisfactory advance. There was also some interruption to threshing during the last decade, but harvest was largely completed, except in the later districts. In the Spring Wheat Belt weather conditions continued favorable during the first decade and the crop made rapid advance, but rain was needed in some parts of North Dakota and Montana. Early spring wheat was heading to the northern part of the belt with stands and color satisfactory; there were reports of black rust, but no indications of general serious damage. The weather continued generally favorable during the remainder of the month and good advance was reported. There was some local cutting by the close of the month and the crop was filling and ripening very satisfactorily. Except for extensive reports of black stem rust in southern Minnesota, this disease was not widespread and much of the crop at the close of the month was believed to be too far advanced for material harm.

Corn.—Corn made better advance during the first decade and cultivation was favored the first part of the month by mostly fair weather. Progress of the crop was fair to very good in most portions of the belt, though